

faecal coliforms at concentrations above 80 per 100 ml.

(Because of the great demand for the analysis of drinking water during the summer, Department of Health laboratories carry an analysis for a private person only to a count of 80 coliform bacteria per 100 ml of water. If more coliforms are present, the report reads simply 80+.)*

The results of this study may give some indication of the operation of nearby sewage systems, if the sample points are well chosen. They will also help in determining the effect of these systems on the bathing areas around the lake.

Since more factors than just the coliform count enter into the evaluation of bathing beaches—factors such as the proximity of known sewage outfalls and the current incidence of water-borne disease—ask your Medical Officer of Health to interpret these results.

If all else is in order, the geometric mean[†] of the total coliform count at the beach can usually extend to 1,000 per 100 ml without giving cause for concern, and in some cases even higher. However, if readings are consistently above 1,000, look for a reason.

*See footnote previous page.

[†]The geometric mean is calculated by finding the number that corresponds to the average logarithm of the logarithms of all counts in the series. If, by any chance, you forgot to bring your log tables to the cottage, write Public Relations and Information Services (see footnote previous page), listing all the readings, to have them calculated for you.



What about dye-testing

One hears a lot these days about the use of fluorescent dyes in tracer studies: flush the dye down the toilet and watch for it in the lake. If the dye shows up in the lake, the system must be polluting. Simple, eh? No!

It's simple enough in principle, but there are several catches. First, even if the dye reaches the lake, it may be hard to find. It should not, of course, be added to the system in such quantities that it creates large, visible patches of color in the lake. In such concentrations it becomes a pollutant itself.

The big advantage of fluorescent dyes as tracers is that they fluoresce: while fluorescing under ultraviolet light in a fluorometer, they can be detected in minute quantities (in the range of parts per billion), a concen-

tration too low to harm fish, plants, or people. But a fluorometer is expensive, ultraviolet radiation in the hands of an inexperienced person can damage the eyes, and the results are difficult to interpret without training.

Even if you find dye in the lake, you may not have proved your point. If two neighbours test their systems simultaneously, whose dye did you pick up? A carefully organized whole-lake study might avoid this difficulty, but not the next one: in all likelihood, the water from a septic tank system will eventually reach the lake.

The important question is not whether it gets there at all, but whether, when it arrives, it has undergone adequate treatment in the soil through which it has travelled. To answer this question requires specialized knowledge of the system, the soil depth and composition, the underground geology of the region, and the shape and flow of the shifting water table.

So—to cottagers who care about their lake, we recommend the sanitary survey described above, which will yield meaningful, significant information with no need for technical interpretation. If the sanitary survey turns up no problems the chances are that all is well, if it shows that all is not well, let the tracer work be a problem for the experts.

If there is a problem . . .

. . . the solution may be simple. Do not let the wash water run into the lake, for example. Run it into the septic tank. Get the privy above the water table, move it to higher ground. (Even if the search turns up no evidence of pollution, matters such as these should be corrected anyway, as a preventive measure.)

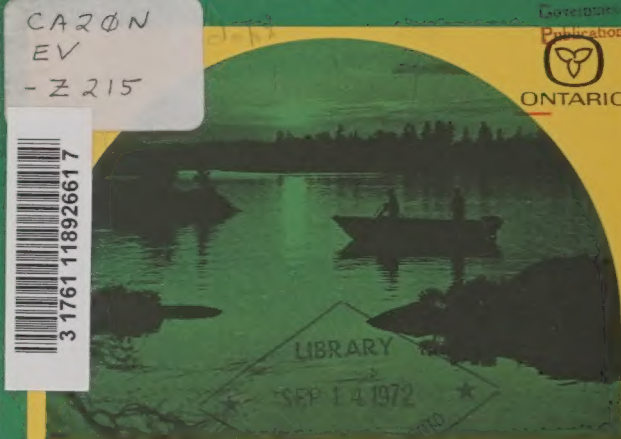
But what if there is no higher ground? What if there is nowhere to put a septic tank, and that is why the wash water was piped to the lake in the first place.

Then the problem is no longer simple, and it is time to call in professional help. The Medical Officer of Health may be available for advice. He is familiar with the area and knows the problems, as well as some of the solutions.

But if you have all built your cottages on bare rock, because that is what the land is like at your lake, and the coliform counts are high and the lake is covered with algae, perhaps it is one that should be high on the list for inspection by qualified professionals of the Department of the Environment.



MINISTRY OF THE ENVIRONMENT
HON. J. A. C. AULD, MINISTER
EVERETT BIGGS, DEPUTY MINISTER



How to find and control pollution in your lake

A SELF-HELP GUIDE FOR COTTAGERS



Pollution in the cottage country

To keep pollution from spoiling the cottage country, your provincial government is continuing its survey of cottage pollution in major recreational areas of Ontario.

Survey teams of the Department of the Environment's Private Waste and Water Management Branch will visit individual cottages this summer to study the means of waste disposal employed, to check the quality of the water in bathing areas, and to suggest improved waste disposal systems where these are found to be defective or inadequate.

It's a big job. There are more than 200,000 cottages already in use in Ontario, and new lots are being approved at the rate of 15,000 or more a year. It's impossible for Department of the Environment staff to catch or keep up with this rate of increase. But you can help.

What can I do?

Many concerned cottage owners are already asking what they can do in the meantime—can they find out for themselves whether their systems are faulty or their lake is deteriorating? If there is a problem, what can they do about it? Where can they get help?

Of course there may not be a problem in your lake. Not all lakes are in trouble, and not all cottage sewage systems pollute. The first step for any concerned group of cottage owners is to find out where they stand.

MAKE A SANITARY SURVEY

To begin, each member of the group can conduct a sanitary survey of his own premises. Many kinds of pollution are easy to spot, and this is what to look for: are any wastes dumped onto the ground or allowed to drain to the lake?

Toilet wastes are not the only ones that matter: where does the dishwater go? the bath water? the laundry water? the garbage?

If there is a septic tank system (or leaching pit), have you ever noticed any ponding? Perhaps after a rainstorm or a party? ('Ponding' is the accumulation of a foul-smelling puddle over the tile field or leaching pit. It indicates an over-used and ineffective system, no longer providing proper treatment to waste water.)

Even if no actual pond forms, is the area ever wet when everywhere else is dry? A damp bank in dry weather, for instance, can reveal a fault in a raised-bed system.

How about the grass that grows above the tile field? It is usually well nourished grass, thriving on a plentiful supply of nutrients and water. A stunted patch, therefore, can indicate an inactive line of tile: crushed, perhaps, or plugged with solids.

Perhaps you are unable to tell by inspection how well your system is performing, especially if none of the tile runs is out of action. If so, you can still compare the size and location of your septic tank and tile bed with the recommendations in the booklet *Septic Tank Systems*, which can be obtained from Information Services, Department of the Environment, 880 Bay Street, Toronto 5, Ontario. Information on privies and other kinds of systems can be obtained from the same source.

If you find that your system is too small or too near the water, but does not seem to be polluting, suspect it and watch it, but do not condemn it—yet.



Check the lake water

Even without human intervention the water of a lake or stream is unavoidably exposed to contamination at any time. Surface runoff can pick up fertilizer and wash over animal droppings (or carcasses) on its way to the lake, and the birds are not dainty in their habits. If people live on the shore, the risks increase. Somebody's septic tank may spring a leak; a rise in the water table that feeds the lake may flood the pit of somebody's privy; someone else may habitually pour his dishwater into the lake, or onto the ground near the shoreline. All of these are potential hazards which warrant occasional lake-water testing.

To begin with, the lake water should not be used for drinking without prior treatment. Even if you test the water and find it free of bacteria,

the results tell you only that the sample you took was pure.* A little later in the day or a little further along the shore, in front of an under-sized tile field perhaps, the results might have been quite different.

The survey of the lake water, then, is not meant to determine whether the lake water is fit for drinking. It probably isn't. Nor will a series of shoreline measurements tell you much about the overall quality of the lake. A lake quality study requires samples taken throughout the lake, at various distances from shore and at various depths, and the results would not necessarily be related to your sanitary survey.

The kind of water testing of interest to cottagers' associations concerned about their sanitary arrangements is a series of samples taken at representative points near the shore. Such testing should be done under the guidance of the local Medical Officer of Health.

Not only can the Medical Officer of Health suggest the best sampling points for a comprehensive shoreline survey without duplication, but he can also arrange for a free bacteriological analysis of the samples at dilutions which will give the true colony counts of total coliforms and

*For information on the treatment of drinking water, consult the pamphlet **SAFE WATER.**

For a discussion of the test analysis of drinking water, see

UNDERSTANDING THE

BACTERIOLOGICAL REPORT ON YOUR DRINKING WATER.

Both publications are available on request from:

INFORMATION SERVICES BRANCH

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